

**AMENDMENTS TO THE CLAIMS:**

Claims 19 and 54 have been amended. Claims 1-18, 20, 24, 26, 28-34, 36, 38-40, 42, 44-48, and 50-52 have been previously canceled. This listing of claims will replace all prior versions and listings of claims in the application.

1.-18. (Canceled).

19. (Currently Amended) A system for optimizing parameters for PCR, the system comprising:

a reaction vessel receiving element, wherein the reaction vessel receiving element is configured to receive one multi-well ~~non-conductive~~ standard microtiter plate and wherein the reaction vessel receiving element is divided into two or more segments that are thermally insulated from one another; and

two or more devices for heating and cooling the reaction vessel receiving element, wherein each device corresponds to only one segment;

wherein the devices are actuated independently of one another to set and maintain different temperatures in two adjacent segments;

wherein the system provides different temperatures to the segments during a temperature cycle to optimize the parameters for PCR.

20. (Canceled).

21. (Previously Presented) The system of claim 19, wherein each segment of the reaction vessel receiving element comprises a base plate with one or more tubular, thin-walled reaction vessel holders, which form one piece together with the base plate.

22. (Previously Presented) The system of claim 19, wherein the segments of the reaction vessel receiving element are each comprised of a base plate with one or more tubular, thin-walled reaction vessel holders, which form one piece together with the base plate.

23. (Previously Presented) The system of claim 19, wherein the segments are insulated from each other with an air gap formed between adjacent segments.

24. (Canceled).

25. (Previously Presented) The system of claim 19, wherein the segments are insulated from each other with a thermal insulator inserted in a gap between adjacent segments.

26. (Canceled).

27. (Previously Presented) The system of claim 19, wherein the devices are Peltier elements, wherein the Peltier elements are thermally coupled to each segment.

28. - 34. (Canceled).

35. (Previously Presented) The system of claim 19, wherein the reaction vessel receiving element is divided into at least four segments.

36. (Canceled).

37. (Previously Presented) The system of claim 19, wherein the individual segments each have the same number of recesses.

38. - 40. (Canceled).

41. (Previously Presented) The system of claim 19, wherein each segment is assigned a temperature sensor, with which the temperature of the segment concerned is sensed, with the temperature of the segment being controlled on the basis of the temperatures sensed by the individual sensors.

42. (Canceled).

43. (Previously Presented) The system of claim 19, wherein each segment is assigned one or more temperature equalisation elements.

44. - 48. (Canceled).

49. (Previously Presented) The system of claim 19, wherein in one operating mode the segments are so actuated that the temperature difference between adjacent segments is less than a predetermined temperature difference ( $\Delta T$ ).

50. - 52. (Canceled).

53. (Previously Presented) The system of claim 19, wherein the parameter optimized is at least one of denaturing temperature, annealing temperature, and elongation temperature.

54. (Currently Amended) The system of claim 19, wherein the parameter optimized is residence time [[of]] at a temperature for at least one of denaturing temperature, annealing temperature, and elongation temperature.

55. (Previously Presented) The system of claim 19, wherein the parameter optimized is rate of temperature change.

56. (Previously Presented) The system of claim 19, further comprising a control unit for actuating the two or more devices, wherein each of the two or more devices is individually actuated.